LEVEL news
Great Lakes-St. Lawrence River Water Levels

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Seasonal Declines Should Soon Begin

Lower Lakes Reach Seasonal Peaks

Heavy rainfall in the last week of June caused increases in the levels of Lakes St. Clair, Erie and Ontario.

Precipitation over the basins of the upper Great Lakes (Superior and Michigan-Huron) was 111% of average in June. The basin of Lakes St. Clair and Erie received 122% of average June rainfall, while Lake Ontario received 87%.

At the beginning of July, the levels of Lakes Ontario and Superior were very close to their long-term averages for the time of year.

Meanwhile, Lake Michigan-Huron was about 12 centimetres above its seasonal average, and Lakes St. Clair and Erie were 36 and 29 cm above average.

Despite their continuing above-average levels, the middle lakes remain well below the record highs for June set in 1986, and below their levels of one year ago

Lakes Superior and Michigan-Huron are expected to continue their seasonal rises through August and possibly September.

Lakes St. Clair and Erie are forecast to enter their seasonal declines and continue a slow downward trend through the summer. Lake Ontario began its seasonal decline in early June.

Montréal Harbour remained between one and 1.4 metres above chart datum throughout June.

Although the harbour's level is forecast to decline over the summer, it should remain above chart datum, the reference level for navigation charts.

The St. Lawrence River between Lake Ontario and Montréal is also expected to remain above chart datum throughout the summer, although its water levels will go down as Lake Ontario continues its seasonal decline.

Knowledge of Great Lakes Outflows Important ... Assists With Management of Fresh Water Resource

Knowing the outflows of each of the Great Lakes is important to the part Environment Canada plays in managing this vast fresh water resource.

A lake's outflows are measured in the connecting channel into which it discharges. For example, Lake Erie's outflow is measured in the Niagara River. A standard technique is the lowering of a current meter from a boat to measure the velocity of the river at various locations.

The first flow measurements for the Great Lakes-St. Lawrence system were made in 1841 in the Niagara River. Since then, numerous measurements have been taken in the outlet channels of the Great Lakes.

The speed and accuracy of these measurements continue to be improved as new techniques are tested; such as, the acoustic doppler current profiler, which uses sound waves to measure flow velocity and feeds this data directly to a computer for processing.

Flow measurements gathered over a period of time under varying lake level conditions allow graphic illustrations called rating curves to be developed. These curves depict what a lake's outflow will be when its water level is at a particular elevation, the stage-discharge relationship. In order to keep these rating curves valid, flow measurements are required every few years.

The relationship between a lake's level and its outflow will change if the outlet channel is altered. This could happen naturally through scouring or deposition of sediment; or it could happen artificially due to addition of, or changes to, structures in the river. In the cases of Lake Michigan-Huron and Lake St. Clair, the levels of the downstream lakes also affect the stage-discharge relationship.

Knowledge of stage-discharge relationships is used in operations related to the regulation of outflows from Lakes Superior and Ontario, and in studies of Great Lakes regulation. Lakes Superior and Ontario are the only two of the Great Lakes that have regulated outflows.

Flow information also plays a part in international monitoring of the amounts of water used by hydroelectric utilities in Canada and the United States according to international agreements.

Both countries co-operate in measuring lake outflows, and in developing rating curves. Environment Canada's U.S. counterpart in this task is the United States Army Corps of Engineers.

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Webmaster
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